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## SOME BRYOLOGICAL PHOTOGRAPHS FROM NORTH WALES<sup>1</sup>

P. G. M. RHODES

The bryologist will hardly find richer ground in Europe than the shady ravines which penetrate the Welsh hills. The writer recently spent a holiday in the company of Mr. D. A. Jones, the well known hepaticologist of Harlech, Merioneth, and was able to photograph some of the more interesting spots in that district. The photographs will give some idea of the rich "Atlantic" flora.

Photograph No. I. Shady siliceous rocks (western aspect) in a mountain wood in the Artro Valley, Merioneth. As a rule the dominant moss in the wood is *Isothecium myosuroides*, occurring on every rock in thick cushions. On damp rocks, such as that one shown, fine patches of *Hymenophyllum Wilsoni* are noticeable: and occasionally a magnificent mass of the still rarer *H. tunbridgense* may be seen. The most noticeable hepatics are the *Plagiochilas*; in the picture *P. asplenoides* and *P. spinulosa* are both seen; *Saccogyna viticulosa* is also there in dense cushions on the face of the rock, though it does not fruit in this locality. A close inspection of the tufts of moss on the rock produced the rather rare *Scapania nemorosa* var. *uliginosa* (this, of course, cannot be seen in the photograph), while the *Scapania gracilis* rivals the *Plagiochilas* in robustness and abundance. On the wet rocks near the mouth of the cave two *Lejeuneas* occur; the common *L. cavifolia* and the rarer *L. patens*.

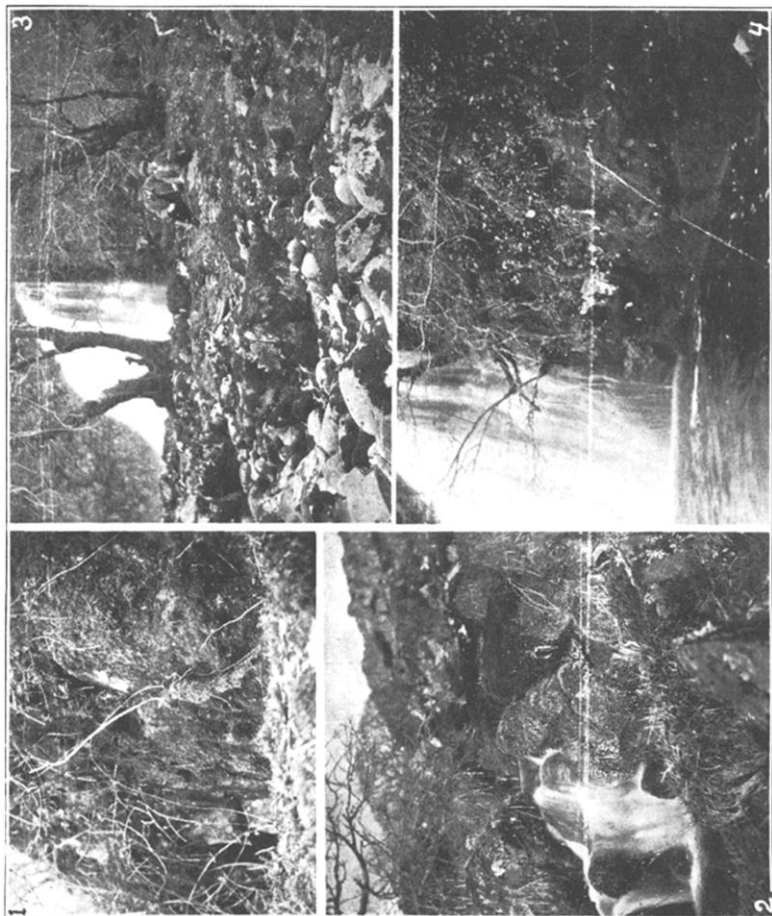
Photograph II. Dinas River, Uchartro, Harlech. Gives a good idea of the rich moss vegetation which clothes the boulders by these mountain streams. The bulk of the moss shown is *Rhynchostegium rusciforme*, *Brachythecium plumosum*, and *Isothecium myosuroides*; on one of the boulders a patch of *Hygrohypnum eugyrium* occurs; in the crevices of the rocks and among the tufts of moss *Metzgeria conjugata* and *Lejeunea cavifolia* are found. Within a few yards of the spot shown, the rocks among which the stream flows, are covered with luxuriant masses of *Madotheca Porella*.

Photograph III. A picturesque spot at the head of Ceuna t Llenyrch, a ravine running into the siliceous hills behind Harlech. The seated figures are Mr. D. A. Jones and his young son Idris. The big boulder is covered with the robust mountain variety *rivulare* of *Isothecium myosuroides*. The sandy detritus among the stones in the foreground is an excellent locality for *Scapania subalpina* and *Eucalyx obovata*. On other rocks *Rhacomitrium protensum* was noticed; and *Grimmia retracts*, so typical of the siliceous Welsh hills, occurs in black tufts everywhere on the stones.

Photograph IV. The same place, showing rocks close to waterfall. The rocks in the middle are covered with a sheet of *Hycomium flagellare*, which fruits freely. On the left *Isothecium myosuroides rivulare* takes its place, with patches of *Brachythecium plumosum*. *Metzgeria conjugata* flourishes, and *Lepidozia Pearsoni* knits together the stems of more robust species with its delicate threads. Not shown in the picture, but within a few yards occur *Stere-*

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<sup>1</sup> See PLATE I.



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*odon callichrous*, *Plagiochila punctata*, *Adelanthus decipiens*, *Bazzania trilobata*, and *B. tricrenata*, deep masses of *Plagiochila spinulosa*, and isolated stems of *Hylocomium umbratum*. It is on such shady rocks as this that *Saccogyna viticulosa* fruits. The plant occurs in a fine patch on the rocks shown, but is sterile. It fruits, however, in the district. Lower down the valley great cushions of *Sphagnum* strike the attention, chiefly *S. rubellum* and *S. molluscum*. *Leucobryum glaucum*, everywhere common in North Wales, is here found fruiting; and on the trunks of the conifers yellowish patches may be seen, which are formed by *Microlejeunea ulicina*. *Breutelia* is abundant, and Mr. Jones pointed out fruiting specimens, on a wall near the ravine.

Should any bryologist wish to study the Atlantic bryophytic flora at first hand, he could hardly do better than make a stay at Harlech, where he will receive a welcome and every assistance from Mr. Jones.

EDGBASTON, BIRMINGHAM, ENGLAND, 11 OCT. 1915.

## ADDITIONS TO THE HEPATIC FLORA OF QUEBEC<sup>1</sup>

ALEXANDER W. EVANS

In the seventh part of Professor John Macoun's Catalogue of Canadian Plants, published at Ottawa, in 1902, sixty-three species of Hepaticae are recorded from the province of Quebec. They are the following: *Riccia arvensis*, *Ricciella fluitans* (listed as *Riccia fluitans*), *Ricciocarpus natans* (listed under the variety *terrestris*), *Neesiella rupestris* (listed as *Grimaldia rupestris*), *Conocepalum conicum*, *Preissia quadrata* (listed as *Cyathophora quadrata*), *Marchantia polymorpha*, *Riccardia latifrons* (listed as *Aneura latifrons*), *R. pinguis* (listed as *A. pinguis*), *Metzgeria myriopoda*, *Pellia epiphylla*, *Blasia pusilla*, *Fossombronina foveolata*, *Jungermannia cordifolia*, *J. pumila*, *Jamesoniella autumnalis* (listed as *Jungermannia autumnalis*), *Lophozia alpestris*, *L. attenuata*, *L. barbata*, *L. incisa*, *L. inflata*, *L. longiflora* (listed as *L. ventricosa*, var. *longiflora*), *L. Muelleri*, *L. porphyroleuca* (listed as *L. ventricosa*, var. *porphyroleuca*), *L. quinquedentata*, *L. ventricosa*, *Sphenolobus exsectus* (listed as *L. exsecta*), *S. Michauxii* (listed as *L. Michauxii*), *S. politus* (listed as *L. polita*), *S. saxicola* (listed as *L. saxicola*), *S. scitulus* (listed as *L. exsecta*, var. "scituta"), *Plagiochila asplenioides*, *Mylia anomala*, *M. Tylori*, *Lophocolea heterophylla* (listed also as *L. Macounii*), *Chiloscyphus rivularis* (listed as *Ch. polyanthos*, var. *rivularis*), *Geocalyx graveolens*, *Cephalozia bicuspidata*, *C. catenulata*, *C. curvifolia*, *C. fluitans*, *C. media*, *Calypogeia Trichomanis* (listed as *Kantia Trichomanis*), *Bazzania trilobata*, *Lepidozia reptans*, *Blepharostoma trichophyllum*, *Temnoma setiforme* (listed as *Blepharostoma setiforme*), *Ptilidium ciliare*, *Pt. pulcherrimum*, *Trichocolea tomentella*, *Diplophyllum taxifolium* (listed as *Diplophyllia taxifolia*), *Scapania curta*, *S. glaucocephala*, *S. irrigua*, *S. nemorosa*, *S. undulata*, *Radula complanata*, *Porella platyphylla*, *Lejeunea cavifolia*, *Frullania Asagrayana*, *F. eboracensis*, *F. Sekwyniana*, and *Anthoceros Macounii*. There are perhaps eight species in this list of which the writer has seen no material from Quebec.

<sup>1</sup> Contribution from the Osborn Botanical Laboratory.